Functionalized Sponges for Rapid and Robust Oil-Water Separation

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Oil spillage and organic chemical discharge from industrial sources have caused severe ecological and environmental problems. The conventional methods used to clean oils and organic pollutants include mechanical extraction, skimming, chemical dispersion, and in situ burning. However, these methods are slow, energy intensive, and often cause secondary pollution. Subsequently, the need for absorbent materials to combat these issues exists.

Researchers at Purdue University have developed a facile and inexpensive method for making high absorption capacity sponges. By combining superhydrophobic and superoleophilic properties, the sponge can effectively separate oil and water. Through the suction of the sponge, this technology can continuously separate various types of oil and organic solvents from the surface of water without unwanted water absorption.

Advantages:
-Facile and inexpensive
-Scalable

Potential Applications:
-Oil-water separation
-Industrial plants, such as petrochemical, chemical, and natural gas processing
-Oil refineries

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